TRMM Monthly Status Briefing

February 29, 2000

FOT Overview

- Operations Status - Engineering Staff
  - Flight Ops Summary - Lou Kurzmiller
  - Training & Certification Status - Lou Kurzmiller
  - Thermal, Electrical, & RCS - Andy Calloway
  - ACS, Deployables, & C&DH - Joe Kowalski
  - RF, Power, CERES, LIS, & VIRS - Candace Shoemaker
  - TMI & PR - Joe Kowalski
  - Ground System & Upcoming Events - Lou Kurzmiller

Flight Operations Summary

- Supported 472 SN events in February
  - 1 Yaw Maneuver & 8 Delta-V Maneuvers
- 3 Event Rpts, 1 Generic Late Acq & 1 Anomaly Rpt generated
  - ER #154, 155, & 156 - Pertain to EPV continuity failures
  - Anomaly Rpt #79 - CERES azimuth stalled going to Cross Track after Delta-V # 165 on 00-057
- Significant Milestones
  - CERES instrument commanded on, 00-055
- Staffing
  - Personnel matters remain stable
  - Job offer made to one console analyst candidate
  - Mgr's office relocated to room E125; phone number TBD

Training

- All four new hires have completed their Console Certification requirements and have been awarded their certificates
- They are now working on the Spacecraft Analyst Certification requirements
  - Requirements include S/C subsystems' training, completion of the reading list and on-line tests..
  - Expected to take about 3 months to complete

Thermal Subsystem

- Thermal subsystem is nominal
- Thermal data for February has been provided to Code 540 for analysis

Electrical Subsystem

- Electrical subsystem is nominal

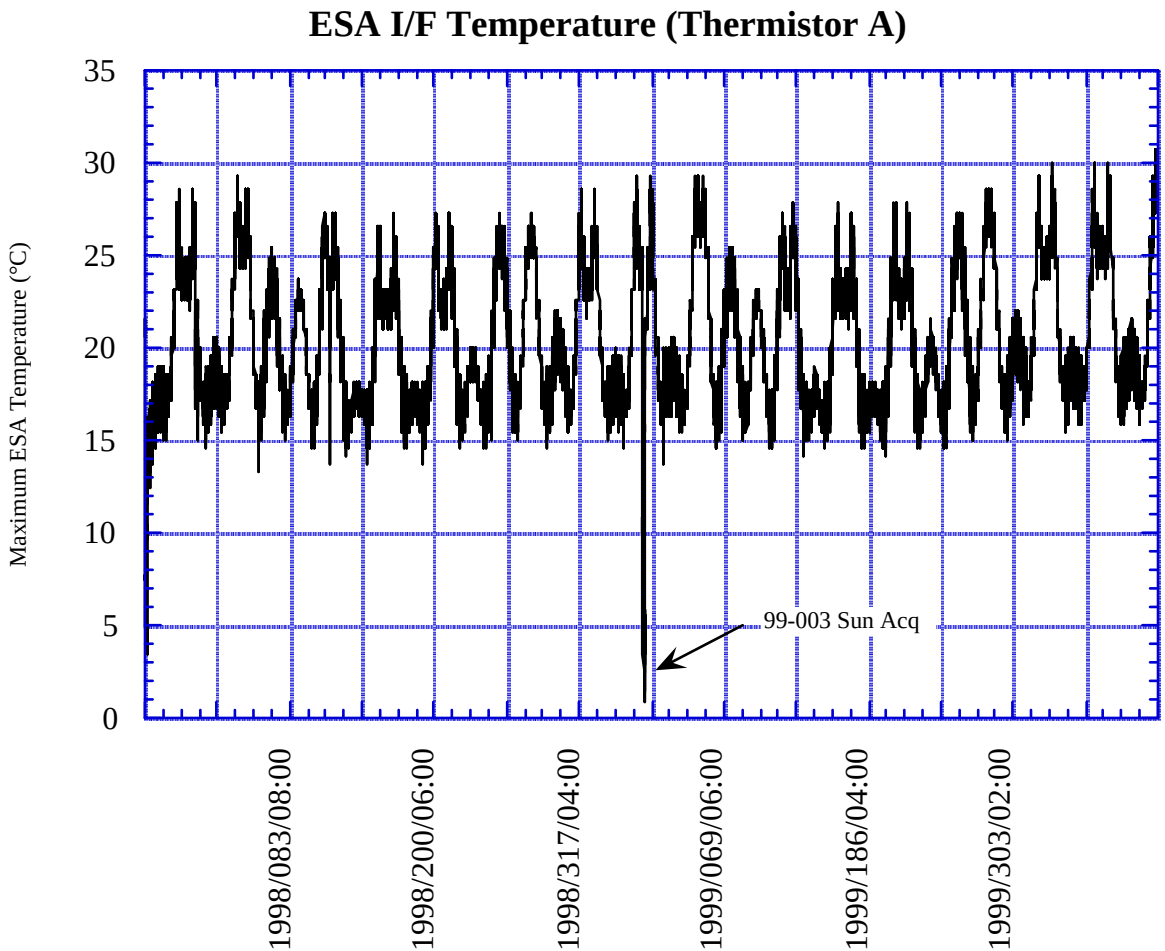
RCS Subsystem

- RCS performed nominally through 8 Delta-V maneuvers #158 - #165
- Maneuver #166 is currently scheduled for Feb 29th (00-060)
- Fuel remaining is 623.9 kg (70.1% of total)
- Average fuel usage per maneuver remains between 1.3 kg and 1.6 kg
- Current maneuver frequency average is every three days
  - Current worst case usage would therefore be 0.53 kg/day putting the beginning of the orbit decay phase in approximately 2.9 years assuming solar activity remains at the current level

ACS Subsystem

- ESA interface (I/F) temperature hit a high temperature of 30.7 °C on 00-053 (plot on next page)
  - Yellow High is 30 °C; Red High is 35 °C
    - » Temperature has always approached ~29.5 °C just below yellow high at similar beta angles
  - Trending shows during the last few months all ESA temperatures have risen 1 °C
  - Internal temperatures remain well below YH
  - FOT will monitor the temperature closely during the next few months for patterns; no plans to raise the YH limit at this time

ACS Subsystem



ACS Subsystem

- Writing to EEPROM
  - Solar Array jitter patch (AR #74)
    - » Awaiting final simulation results (Deep Space Cal and non-nominal Yaws)
    - » ACS AETD to review all data to determine acceptance of patch
  - Correction for Magnetic Field Epoch (CCR #005)
    - » Awaiting ACS analysis
  - TDRS EPVs limits update (AR #60 - CCR #035)
- Yaw updates
- ESA Fogging
  - Currently steady

ACS Subsystem

- Possibility of pitching S/C to warm PR in Safehold or Sun Acq
  - Pitch versus thermistor locations analysis
- ACS Flight Software bug (CCR #053)
- Correction of RTS #2 (CCR #058)
  - Awaiting MD approval prior to building and testing the new RTS

Deployables Subsystem

- -Y solar array drive temperature
  - Currently solar array drive continues to operate nominally
- Open Issues
  - Deployables AETD looking into the possibility of checking the glitch buffer by loading software stops that will enable the solar arrays to track past 90°
    - » Risk Analysis to be conducted first
      - Will any actions be taken if missing steps are found?

C&DH Subsystem

- UTCF was adjusted on 00-036 and 043
  - Current UTCF value is 31535996.849360 sec
- FS Adjustment on 00-044, new value x'78A'
- Open Issues
  - Writing from RAM to EEPROM (CCR #034)
    - » New TSM table #21
    - » New RTSs # 2, 3, 13, 14 and 15
  - No-op of unwanted RTSs (CCR #057)
    - » Awaiting MD approval
  - New DS filter table to record ACE data (CCR #048)
  - No-clock software patch developed, although no indication of anomaly on FS B (CCR #047)
    - » Possible FS-A a failover option

RF Subsystem

- Predicted MI on 00-035
- Generic Late Acquisition on 00-052 (#49)
- Open Issues
  - Offsetting the transponder frequencies looking more probable based on trending
    - » Options include:
      - NCC database change
      - Modifying AOS/LOS sequences for XP-2

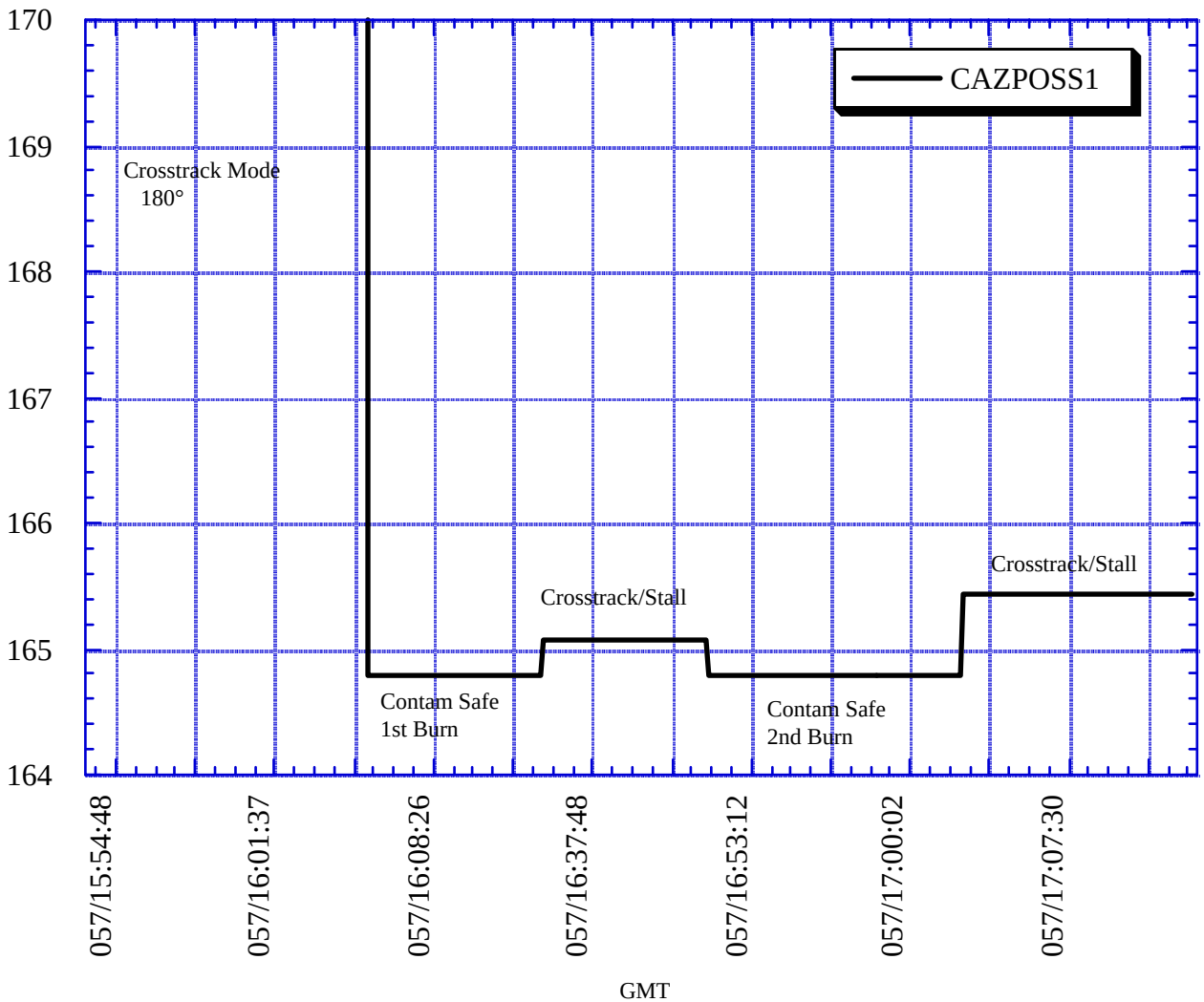
Power Subsystem

- PSIB CCRs:
  - Included in the patch:
    - » FSW (CCR #050) PSIB timer routines (AR #73)
    - » FSW (CCR #059) Incorrect load address following reset
    - » FSW (CCR #061) PSIB Battery 2 Voltage Differential Telemetry Bug
  - FSW (CCR #060) PSIB Reset Count Increments Incorrectly
    - » Behavior of the hardware - no s/w fix
    - » Closed with documentation
  - FSW (CCR #062) Bug in PSIB S3R2FTF/WS3R2FTF Conversion Tool
    - » Patch to tool code needed to correct
- Open Anomalies
  - #73 PSIB A Orbit Status Timer Unchanged
    - » Will be closed with the patch uplink

CERES Instrument

- Turned on for Philippine volcanic eruption in science data on 00-055 at 21:30z
- DAA +15V converter telemetry saturated (19.92 V) on 00-056 at 05:05z
- Azimuth stall after Delta-V on 00-057 (Anomaly #79)
  - Stalled in transition from Contamination Safe to Crosstrack (see plot)
    - » Changes azimuth positions from 165° to 180°
  - LaRC engineers determined instrument nominal - azimuth bearing just “sticky” from long period of no movement
  - Returned to Crosstrack from Safe mode on 00-058 - no problems
  - Contamination safe angle redefined to 180° (crosstrack position)
  - Gimbal data taken while rotating between 170 and 190° on 00-059

CERES Instrument



LIS Instrument

- Routine MSFC real-time command requests performed on 00-034 and 00-053
- Closed
  - MSFC *LIS Thermal Switching Anomaly of mid-October, 1999* report received to close out Anomaly #78
  - Heater controller to remain permanently disabled

VIRS Instrument

- VIRS is nominal
- 2 Solar Calibrations were performed this month on 00-037
- Blackbody Temperature still being maintained between 9°C and 16°C

TMI Instrument

- No concerns or open issues

PR Instrument

- 3 External Calibrations done in month of February
- Open Issues
  - Frequency agreement expiration
  - Opening of PR survival heater relays
    - » Will initiate talks with NASDA via USA TIL
      - FOT has written a draft of the TIL and sent it to Dr. Kummerow for review

Ground System

- Mission Planning now prime on string 3
- Event Reports
  - #154: TRMM EPV Failed Continuity (00-051) - Post Delta-V
  - #155: TRMM EPV Failed Continuity (00-053) - Previous day file used
    - » Current file not available at the time
  - #155: TRMM EPV Failed Continuity (00-054) - Post Delta-V

Upcoming Activities

- 0-2 Months
  - Special CERES operations in conjunction with Terra
  - Replace Launch RTSs with Noop commands in RAM & EEPROM
  - SA Jitter Patch to EEPROM
  - Dump ACS / SC EEPROM Memory and update GRIs
  - Compile new ODB version 11.2
  - PSIB Patch Uplink
  - Continue to close open CCRs, MOCRs, ERs, ARs, and MSR Action Items
- 2-3 Months
  - System Software Release 8.1 Delivery
  - Emergency EPO Switch location transfers
  - 1st draft of TRMM Continuous Risk Management Plan

Upcoming Activities

- 3-12 Months
  - Test, validate, and eventually accept new PACOR-A system
  - Testing of new PTP hardware and software deliveries
  - System Software Release 8.2 Delivery